TODAY

MEDICAL COLLEGE OF GEORGIA

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A harvest of hope

A failing kidney once meant inevitable death. A damaged cornea was a window on a world with a hazy view. A diseased bone made every movement painful.

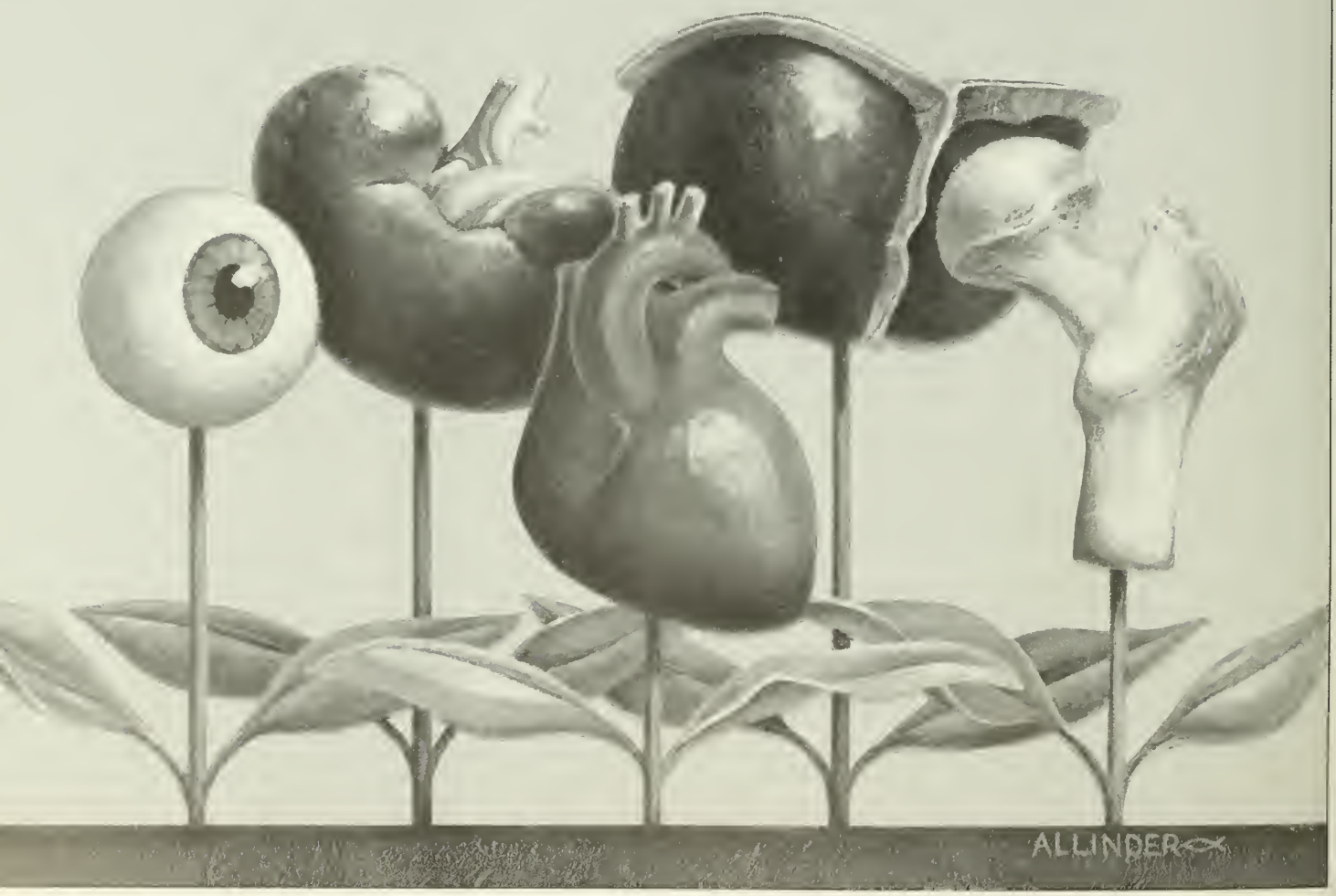
Today, the outlook is not so gloomy. Stories in this winter issue of *Medical College of Georgia Today* explore why organ donation and transplant teams at the Medical College of Georgia are reaping a harvest of hope.

Success stories are many. One is Gerald Josey, a 16-year-old who is off dialysis for the first time in his life. Kaye Griffin can keep up with her children now — thanks to a bone implanted in her hip by MCG's Dr. Ronald Hayter. And with a corneal transplant, Bob Bolton will be able to see his grandchild more clearly than ever this Christmas.

MCG's organ procurement team harvested, among other organs, 48 kidneys during the past year. Ten years ago, two kidneys were retrieved. But that only tells part of the story. Today, the team is harvesting hearts, livers, eyes, bones and skin as well.

Organ procurement director Mary Anne House is helping to write state guidelines that will for the first time require hospital personnel to inform patients and their families about organ donation. That means a better chance of finding people such as Scott and Loretta Lawlis, who donated their infant daughter's corneas to the MCG Eye Bank. Others are also looking to the future. Dr. Armand Karow is conducting organ preservation research he hopes will be the foundation for "banks" to store supplies of organs. Physicians will then be able to make better donor-recipient matches and decrease the danger of rejection.

These stories and others prove that organ transplantation has a strong foundation at the Medical College of Georgia.



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The Medical College of Georgia is the health sciences university of the University System of Georgia. Focusing on health care education, research and patient care, the Augusta-based institution consists of MCG Hospital, more than 80 support clinics, statewide outreach programs and the Schools of Allied Health Sciences, Dentistry, Graduate Studies, Medicine and Nursing.

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NETWORKING

National agencies channel organs to people in need

By John Donnelly

It's the middle of the night. Mary Anne House has just received permission to harvest the organs of a brain-dead auto accident victim.

For the next few hours, Ms. House, director of the Medical College of Georgia Organ Procurement Program, will be on the telephone and at the computer trying to match the organs with patients around the country.

"Once we have identified a vital organ donor (heart, lungs, liver and kidneys), the first step is to get the prospective donor's medical status. This includes age, weight, blood type and sex. If these categories fit within our parameters, we call the 24-ALERT number," she said.

The 24-ALERT toll-free number, housed at the University of Pittsburgh, is accessible from any phone in North America. When activated, the computer at the other end of the line searches its files for potential recipients. A recording tells Ms. House where these patients are and how compatible they are with the donor organs.

"After this, we just get on the phone and start calling the centers where these patients are located until we get a match," she said.

A patient awaiting transplant is generally listed at his home center in case a local donor is found. Otherwise, the patient is listed with a regional network such as the Southeastern Organ Procurement Foundation (SEOPF) which serves several transplant centers. The patient will also be listed with one of the two national transplant networks, 24-ALERT and the United Network for Organ Sharing (UNOS).

If organs harvested from the donor include the kidneys, Ms. House goes to her computer and calls UNOS and repeats the process she went through with 24-ALERT.

"UNOS was originally set up strictly to handle kidney donations, but that is slowly changing. Ultimately, we want to combine the two systems into one network," she said.

The need for a single communications network for organ procurement was emphasized with the endorsement of the Task Force on Organ Procurement and Transplantation.

The task force was formed through the Organ Transplant and Procurement Act of 1984. The Act, Public Law 98-507, established an Organ Procurement and Transplant Registry and prohibited the purchasing of organs for human transplantation.

The task force was charged with assessing the state of public and private procurement programs and problems in coordinating organ procurement. They were to make recommendations for training and educating both health professionals and the public and for assuring equitable access to organs by medically qualified patients.

Their report, presented to the Congressional Committee on Labor and Human Resources and published in April contained more than 200 pages of information and recommendations.

Dr. Olga Johasson, chairman of the task force and professor of surgery at the University of Illinois, reported to the congressional committee that "the (organ transplantation and procurement) programs and systems currently in place have achieved a high degree of success and have saved many lives. We urge policymakers at all levels to proceed expeditiously to improve this complex system."

A single national system for organ sharing would include a patient registry and would coordinate organ allocation and distribution to improve matching of donors and recipients.

A registry of organ recipients, administered through the organ sharing network, would allow procurement and transplant centers to exchange information and analyze data.

About $400,000 to start a National Organ Transplant Network has been approved but not allocated.

The Act resulted from increased awareness in Congress, brought on partly by individual pleas for organs in the media, that organ supply was not meeting demand.

A report submitted by Sen. Orrin Hatch said: "the number of donated organs that become available falls far short of the number of people on waiting lists at any given time. Although it is estimated that in this country up to 20,000 people die annually under cir-

Mary Anne House rushes an organ to a waiting recipient

Photo by Lannis Waters

cumstances that would make them suitable organ donors, organs are actually recovered from fewer than 15 percent."

Money is another reason. While Medicare covers the cost of kidney transplants, patients needing other organs find that insurers classify the surgery as experimental and therefore not eligible for coverage.

While the skills for performing organ transplants are well known to surgeons, the federal department of Health and Human Services Office of Organ Transplantation lists only 70 medical centers technologically advanced enough to perform heart transplants and only 38 capable of performing liver transplants.

Georgia has organ procurement agencies at the Medical College of Georgia and at the Atlanta Regional Organ Procurement Agency in Atlanta. The Medical College program covers eastern and southern Georgia, including Athens, Savannah, Brunswick, Tifton, Waycross and Valdosta. The Atlanta program covers the rest of the state.

Organ procurement legislation in Georgia is being amended and will take effect July 1. The amendment will make organ donation requests standard procedure in hospitals.

The bill also provides for the record keeping of donor gifts and the establishment of regulations for training those who make requests for organ donations. Like the federal act, the new Georgia law will prohibit the buying or selling of organs or other human body parts.

Ms. House, who helped draft the new state legislation, said the current anatomical gifts law in Georgia does nothing more than give a person the right to be an organ donor.

The acceptance of organ donation through education and example is becoming more widespread. The establishment of the Office of Organ Transplantation in the Public Health Service is an example of the effort taking place to close the gap between potential donors and those needing vital organs. It is a situation in which potential recipients, the procurement teams and the transplant centers all benefit. ■

NUMBERS TELL THE STORY

MCG's organ procurement program has come far in 10 years

By John Donnelly

The numbers are telling.

In fiscal year 1985-86, the organ procurement program at the Medical College of Georgia coordinated the retrieval of 48 kidneys, 15 hearts, two livers, one heart-lung bloc, 65 eyes, nine bone and 24 skin donors.

Ten years ago, MCG physicians harvested just two kidneys.

The past decade's expansion of the Medical College of Georgia Organ Procurement Program can be attributed to several factors — some directly fostered by the program and others part of a general increase in public awareness.

Education, both of the public and of health professionals; medical advances that reduce the chances of transplant rejection, the addressing of organ procurement needs by state legislatures and the Congress and improved communications between procurement programs and transplant centers have all promoted organ procurement.

"Before 1977, we were procuring some kidneys for transplantation, but it was not until the government gave the Centers for Disease Control (CDC) the mission of helping people with end-stage renal disease that we really got involved," recalled Dr. Arthur Humphries, professor of surgery at the Medical College of Georgia and a pioneer in the preservation of kidneys for transplantation.

The CDC initially chose three centers — Emory University in Georgia, the Midwest Organ Bank in Kansas City and Northwest Kidney Center in Seattle — for pilot programs.

"After a few months, Emory thought to include us in the program and we jumped at it," Dr. Humphries said.

"The CDC program looked at the charts of people who died in hospitals and determined which could have been potential kidney donors. Dr. Ken Bart with the CDC collected this material, made up data sheets and check lists and drew up donation criteria," Dr. Humphries said. The criteria required that the patient be brain dead (showing no activity on an electroencephalograph) and could not be more than 60 years old.

"With this information, hospital personnel could be approached and told, 'Look, you had X number of potential kidney donors in the past year, please call us when you have a death that meets these criteria,'" Dr. Humphries said. "This caused a dramatic increase in the number of donated kidneys."

At MCG, registered nurse Neal Mathews was hired to review deceased patients' charts, do local data analysis and talk to local hospitals. His position evolved into transplant coordinator.

Mary Anne House, MSN, who became administrator of the Medical College of Georgia Organ Procurement Program in 1979, said that when charts were examined for potential kidney donors in hospitals with more than 100 deaths a year, "they found about two percent of the people met the criteria.

"The coordinator then had to get the administration of these hospitals and the physician/nursing community to work together for increased kidney donations," she said.

Donations increased to between 10 and 20 a year in the late 1970s for two primary reasons, according to Ms. House.

"First, since Georgia enacted one of the country's first brain death laws in 1975, physicians were more comfortable declaring people brain dead. The Medical College of Georgia Organ Procurement Program also became more aggressive in our activity with the major acute care hospitals because this was where the potential for vital organ donors existed," she said.

Donations also increased because of better communication between transplant centers and hospitals with potential organ donors.

"In this region, the Southeastern Organ Procurement Foundation (SEOPF) had been around since 1969 as a referral mechanism for matching potential recipients with donors," Ms. House said. "It was not until the late 1970s, however, that

Dr. Arthur Humphries

their system was computerized."

With the computerization of information on potential recipients, the number of centers belonging to SEOPF grew to 54. Centers outside the Southeast wanted to participate in the organization and were allowed to buy in under the name, United Network for Organ Sharing (UNOS). "Now, almost everyone belongs to UNOS," Ms. House said.

Another organ sharing network, 24-ALERT, deals primarily in vital organs other than kidneys — hearts, lungs and livers.

In the late 1970s, kidneys were the only vital organ being successfully transplanted. The development of the immunosuppressant drug cyclosporine in the early 1980s, however, meant advances in the transplantation of other vital organs — the heart, liver, pancreas and lung.

"When cardiac and liver transplantation began, we decided that as an organ procurement agency, we had to offer support for these programs," Ms. House said.

One example of this support is the responsibility the Medical College of Georgia program has taken in recovering hearts for the cardiac transplant program at University Hospital in Augusta. The MCG Organ Procurement Program places potential cardiac transplant patients on the 24-ALERT system and has also coordinated all 18 of the cardiac transplants done at University Hospital.

"The Organ Procurement Program is vital to our cardiac transplant efforts," said Robert Zeyfang, director of University Hospital's Georgia Heart Institute. "There is no way a single transplant center could run their own nationwide procurement system. The Organ Procurement Program has worked very closely with us in supplying our needs."

A written agreement between the Medical College of Georgia Organ Procurement Program and University Hospital defines procedures for placing a patient on the 24-ALERT system and describes the responsibilities of the two parties.

In the 1985-86 fiscal year, the Medical College of Georgia Organ Procurement Program signed agreements with hospitals in Augusta, Savannah, Tifton, Sparta, Statesboro, Fitzgerald, Aiken and at Fort Gordon and Fort Stewart. Thirteen hospitals have signed such agreements, and an additional 25 are reviewing proposed agreements.

Agreements are not a necessity before organs and tissues can be procured from a specific hospital, Ms. House added.

"We have received six organ donations from hospitals in one area city so far this year and have not yet signed agreements with them. The agreement just defines who does what."

Most organs and tissues procured by the MCG Organ Procurement Program come from Augusta, Athens and Savannah. Enough organs are procured in Savannah to sustain a full-time staff member, Robert Richards. "I can foresee the time when we could need a similar position in Athens," Ms. House said.

Convincing hospitals to agree to work with the procurement program is only part of the job. Pairing recipients and donors also requires much coordination.

Because time is important, most organs are flown to their destinations. Kidneys are transported two ways — on a perfusion machine, which circulates solutions to keep them alive, or packed in an ice cooler. They are accompanied by transplant personnel only if they are on the perfusion machine. If they travel in an ice chest, "we don't have to go with the kidney. They have grown up, they can travel by themselves in the cockpit with the pilot," Ms. House said.

While kidneys are sent to their destinations, other organs suitable for transplant — hearts, lungs and livers — are retrieved by a transplant team from the organ recipient's center.

"Extrarenal organs remain viable for a much shorter time than the 48-hour plus viability of a kidney," Ms. House said. "Getting an operating room so the organs can be harvested, getting the transplant team to and from the hospital from the airport, making sure they have everything they need, all of it takes time and coordination."

The Medical College of Georgia Organ Procurement Program sees education as an important part of its mission. Through education, Ms. House and her colleagues hope that more people will become organ and tissue donors and more hospital personnel will ask patients' families about organ and tissue donation.

"The education we provide, both to

the hospital staffs and the general public, has certainly increased the number of donation referrals we receive in eastern and southern Georgia," she said.

Last year, Ms. House and her staff in Augusta and Savannah presented 69 professional education lectures to nursing staffs, physicians, housestaff, medical students and others. Continuing education courses were also offered for clergy.

They also gave 60 public education talks. "We do a lot with churches, civic clubs and schools," Ms. House said. "This fall, the local Boy Scouts took part in a nationwide program to increase organ donation awareness."

The emphasis on education has had its effect, Ms. House said. "Referral rates are up, donation rates are up. Knowing the population from which we draw donors, those giving now would not have given two years ago. More often now, when we sit down with a family and begin to explain organ and tissue donation, they are aware of it and understand what is being asked of them."

Educating state legislators has proved effective in increasing public awareness of the needs of organ and tissue donation. Every state has now passed an anatomical gifts law allowing organ donations. Ms. House has been involved in passage of an amended law in Georgia which requires hospital personnel to request organ and tissue donations from appropriate families.

Health care providers are also more aware of the need to ask about the possibility of organ and tissue donation.

"These people are becoming aware that asking about organ donation is an obligation, not an option," Ms. House said.

"We are getting calls from the housestaff that we didn't get before," she said.

This increase in calls results from the organ procurement staff meeting at least once each year with new house staff at each of the state's teaching hospitals—Medical College of Georgia Hospital, Eisenhower Army Medical Center and Memorial Medical Center/Savannah. "Three years ago we didn't even do that," Ms. House said.

Education is the key to the continued progress of not only the Medical College Organ Procurement Program, but of all the procurement programs nationwide. Through education, more people will become aware of the need for donor organs and tissues and learn of the lives these transplants have improved and saved. ■

THE EARLY YEARS

By Carol Daly

Dr. Arthur L. Humphries Jr. remembers a day not so long ago when there was little hope for a patient whose kidneys failed.

When he came to Talmadge Memorial Hospital (now the Medical College of Georgia Hospital) as a resident in 1957, dialysis was not widely used and kidney transplantation was still in the experimental stages.

But Dr. Humphries knew things could be different.

Before coming to MCG, Dr. Humphries served in the U.S. Army. During his service, the young doctor began to believe that he could find a way to help the patient dying from kidney failure.

A research paper published by Dr. David Hume in 1954 reported nine cases of human cadaver kidney transplants. One of the nine patients lived six months, although no drugs were then used to combat kidney rejection.

"That paper stimulated me to do my research in the Army," Dr. Humphries said.

Most transplantation research had been done with dogs, but Dr. Humphries was very successful with his experimentation on goats. The average kidney lived 18 days.

"Since that (the 18 days) was so much better than dogs, I wrote a paper on it. That's when I got the bug for this stuff and I've still got it," said the man who is now professor of surgery and chief of the Medical College of Georgia transplantation service.

Dr. Humphries continued his research when he arrived at the Medical College of Georgia. When he finished his residency, he began researching ways to preserve kidneys.

Using dogs, the research involved removing the kidney from a dog and reimplanting it in the same animal. The purpose of the research was to see how long a kidney could be kept out of the dog, reimplanted and still function.

"We'd have the kidneys out for one day, two days, three days, four days, five days... We were the first in the world. Somebody beat us to seven days. But we actually had that record for a while," Dr. Humphries said.

Preservation still plays a key part in the transplantation process, Dr. Humphries said, noting a case from the night before.

"Last night we got a kidney. It took about eight hours to get here, then it took about six hours to find out we could not use it despite the preliminary decision that it would be good for our patient. Then we had to turn around and ship it off to somebody else. All that time, the kidney is dying a little bit."

The preservation research done by Dr. Humphries and his colleagues was adopted by a doctor in San Francisco. The California doctor used the methods and improved upon them. In 1967, he started doing human cadaver kidney transplantation. He was the one to really give it credibility, Dr. Humphries said.

In 1968, Dr. Humphries went to Salt Lake City to observe a transplantation program. And in August of that year, the first kidney transplant was performed at the Medical College. The first transplants provided an exciting, but challenging time for the surgeon and his colleagues.

"Dr. (William) Moretz (then chief of surgery and later president of MCG) assisted me with the surgical part of the first transplant and that was a big help.

The doctor in Salt Lake City was on the other end of the telephone line. He helped us decide how much of the drugs to give, how to diagnose rejection and so forth."

The first week after that transplant did not seem too bad, but it was the months and weeks to follow that provided the trials, Dr. Humphries said.

"We became more anxious after about the first month. The patients would start having complications and it would get to be pretty hairy for awhile. It still is, for that matter."

The second transplant patient, Kenny Burcham of Jesup, Ga., received a kidney transplant in November 1968. He is still living, as are many of the other early transplant patients.

During the first years of the transplant program, only the most fortunate were candidates for kidney transplants.

Because Medicare wouldn't pay for the operation and the transplantation service was small and slightly staffed, kidney recipients often were chosen because they were the youngest and healthiest.

The situation was much the same across the county.

Dr. Humphries remembers a photograph in *Life* magazine depicting the touchy situation. Sitting around the table was a committee of community leaders, a social worker, a pastor and so on. Their job was to choose the candidate for the transplant. "They were meeting to decide who was going to live and who was going to die. It was awful."

But many changes have been made since then.

Medicare began underwriting the kidney transplant program seven or eight years ago. That change allowed the transplant service to add to its staff.

Physician assistants became part of the team. "We couldn't get by without those PAs," Dr. Humphries said.

The change allowed the hospital to add nurses to operate the organ procurement service. An immunologist was added to run the tissue typing lab. Technicians also were hired.

Improvements in the medicines used to prevent and combat rejections have improved the success rate of kidney transplants greatly in the last 10 years, said Dr. Humphries.

One of the latest discoveries, a monoclonal antibody called OKT3, has been very effective in reversing rejections. This drug, along with several others, has made transplantation much safer.

Even with advances, there are still many patients waiting for kidney transplants — about 50 at the Medical College of Georgia. But until donors are located, the patients remain on dialysis.

"There are enough cadaver kidneys, we just can't get permission from enough people to use all of the suitable ones," said Dr. Humphries.

This year, Dr. Humphries hopes the service will be able to do 60 or more transplants. About 50 were done last year.

Although Dr. Humphries played a major part in establishing the kidney transplant program, he is quick to name others who were an essential part of the effort.

Dr. Dave Dennis was the primary nephrologist until about three years ago. Dr. Allen Bowen has since filled that position. Dr. Bowen was instrumental in the expansion of the transplant program at MCG.

Dr. George VanGiesen, who no longer is on staff, also was instrumental. His patient was the first to receive the kidney transplant. Dr. James B. Hudson, chief of nephrology, was another key figure. Dr. Roy Witherington has performed bladder surgery as part of all transplantations and the complete operation on all living related donors since 1972. Others include Dr. Charles Wray, Dr. Robert Nesbit and Dr. Bill Chew, who have all helped to make kidney transplantation a thriving and expanding service offered by the Medical College of Georgia. ■

Dr. Allen Bowen and physician's assistant Janet Barnett check kidney transplant patient Priscilla Ware

Just like starting over

A new kidney means new life for Gerald Josey

By Terri Hinner

Gerald Josey, 16, is finally able to have his long-awaited normal childhood.

Since the age of 3, Gerald has spent half his life in and out of hospitals. But thanks to his older sister Lawanda Smith, Gerald is able to see a brighter future.

Last August 6, Gerald received a new kidney from his sister. Exactly a week later, he left the Medical College of Georgia Hospital to start his new life.

"They said it was the fastest recovery they had ever seen," Gerald said.

"The doctor said the (tissue type) was a perfect match and my new kidney started to work right away."

At 3, while living with his family in Wadley, Ga., Gerald first became ill. He was running a temperature and vomiting.

"They treated me for everything from a cold to pneumonia," Gerald said. "Then they discovered that I had a kidney infection."

He was taken to University Hospital and treated for the infection. Soon after being released, he was readmitted because the infection returned.

The only answer Gerald got when he asked about his illness was that he was born with it.

"I was told my kidneys had been failing since birth and they were gradually getting worse and worse," he said.

In 1979 at the age of 9, Gerald underwent surgery to repair the ureter connecting the kidney to the bladder. The malfunctioning ureter was causing continuous kidney infections.

When infections recurred, a ureterostomy was performed two years later. The ureter was moved to the outside of his body, where it was connected to a urine pouch.

Gerald admits the pouch caused many problems.

"If the bag would bust it would wet my jeans and I would have to make up excuses to tell the other kids. It was very embarrassing."

"He never had a child's life as far as enjoying things because he was embarrassed about the pouch," said his mother, Betty Jean Josey.

Gerald lived with the anguish of a ureterostomy for almost six years, until his infected kidneys were removed at MCG.

In June 1986 after his tissue type was matched perfectly with his sister's kidneys, Gerald's own were removed in preparation for the transplant.

"The kidneys were so infected they had to remove them because they didn't want the infection to spread to my new kidney," he said. "They were removed exactly two months before my transplant and I then began dialysis."

The treatments were long and hard: three days a week, four hours a day. It was hardly an ideal summer vacation for a 16-year-old.

"Dialysis really pulls you down," Gerald said. "When I got home, I didn't feel like going anywhere so I would go to my room and sleep."

Then came the time for his transplant. Although two of his sisters had kidneys compatible with their brother's, Lawanda decided to be the donor. Her husband's cousin had had a transplant, and she knew about the long wait.

"She waited and waited and waited for a kidney and she suffered a lot. I didn't want him to have to go through it," Lawanda said.

Both Gerald and his sister had a good feeling about the success of the operation.

"I knew it would (be successful)," she said. "It didn't worry me a bit."

On August 6, Dr. Roy Witherington removed a kidney from Lawanda, and Dr. Arthur Humphries implanted it in Gerald. So far the transplant has proven to be a complete success, without any sign of rejection.

Gerald is taking full advantage of his new kidney. He returned to Westside High School this fall and is eager to catch up on his studies. He is also looking for a job and hopes to buy a car. He dreams of one day becoming a rock star and can almost always be found playing his electric guitar.

"The doctor said that I would lead a normal life like any other kid. The one thing I must do is take my medicine every day because my kidney might reject and that would throw me back into the hospital and I would have to start dialysis all over again."

Gerald's advice to others who are about to face a transplant: "Go ahead and get the operation done because it's the best thing you could ever do." ■

Gerald Josey with a photo of his sister Lawanda and her family ►

Donors find comfort in soothing others' pain

By Catherine Boardman

Fred Robinson says he loves what he did for his brother. Deciding to give one of his kidneys to his 34-year-old brother, Alphonzo, was not difficult, says the 30-year-old Savannah man.

"I drove him to Augusta for dialysis treatment and saw how it made him lose all of his energy and decided to do whatever I could to help. Also, I know he would do the same for me if it came down to it," Mr. Robinson said.

Mr. Robinson knew he had done the right thing when his brother looked at him after the transplant and said, "it's working like a champ."

Giving a kidney to his brother was an unselfish act of love, concern and courage for Mr. Robinson. As a living donor, he was able to experience the positive aspects of organ donation.

In other cases, a family has to decide to donate the organs of a dead relative.

"If the individual had expressed his intention to become an organ donor, the family has an easier decision to make. However, in many cases, the family does not know their loved one's desire. This is particularly true with children," said Robert Richards, a Medical College of Georgia organ procurement coordinator in Savannah.

Don and Frances Arnold and Dale Croft faced that decision after a motorcycle accident that killed their 17-year-old son Joey Croft.

Mrs. Arnold had met an Augusta man in need of a heart and so had thought about organ donation. She discussed it with Joey's stepfather, Mr. Arnold, the morning before Joey died.

Mr. Croft hadn't considered organ donation until an MCG organ procurement representative suggested it after his son's death.

"I hesitated a little bit because after just learning that my son had died, there were so many things going through my mind. You're hurt and you don't know what to do," Mr. Croft said.

In the midst of their grief, Joey's relatives considered their dilemma from another perspective.

"You think to yourself, 'What if it was the other way around?' That's the first thing that comes to mind, what if it was Joey needing a heart," Mr. Croft said.

Mrs. Arnold considered her son's ideals in making the decision to donate Joey's organs.

"If we had ever had the opportunity to discuss it with him, I feel like Joey definitely would have wanted his organs donated. He was just that type of person — very giving," Mrs. Arnold said.

Deciding to donate their son's organs provided some comfort to Joey's relatives. Although the decision had to be a fast one, the Arnolds and Mr. Croft all agree they made the right choice.

Time restriction is one factor against organ donation, Mr. Richards said.

"I'm very impressed with families that decide to go through with organ donation because of their compassion for other people — people they don't even know," he said.

As an organ procurement coordinator, Mr. Richards presents the option to families and helps them decide if organ donation is what they want.

Typically, Mr. Richards talks with the families of patients who have suffered an irreversible catastrophic brain injury which has resulted in brain death. In brain death, all brain activity has permanently ceased, but vital organs can continue to function with the use of artificial life-support. The official time of death is the time when physicians declare that all brain activity has ceased.

Mr. Richards talks with families to ascertain that they have a firm understanding of brain death.

"In the state of shock and loss over the death of a loved one, brain death is one of those concepts that is difficult to understand and harder to accept. I ask them to explain to me what they have understood about the condition of their loved one. If they say there is a chance he will come out of it, I know they didn't fully comprehend the meaning of brain death," Mr. Richards said.

People's responses to the thought of organ donation usually depend on their stage of grief, Mr. Richards said.

"Emotionally my job is very, very difficult," he said.

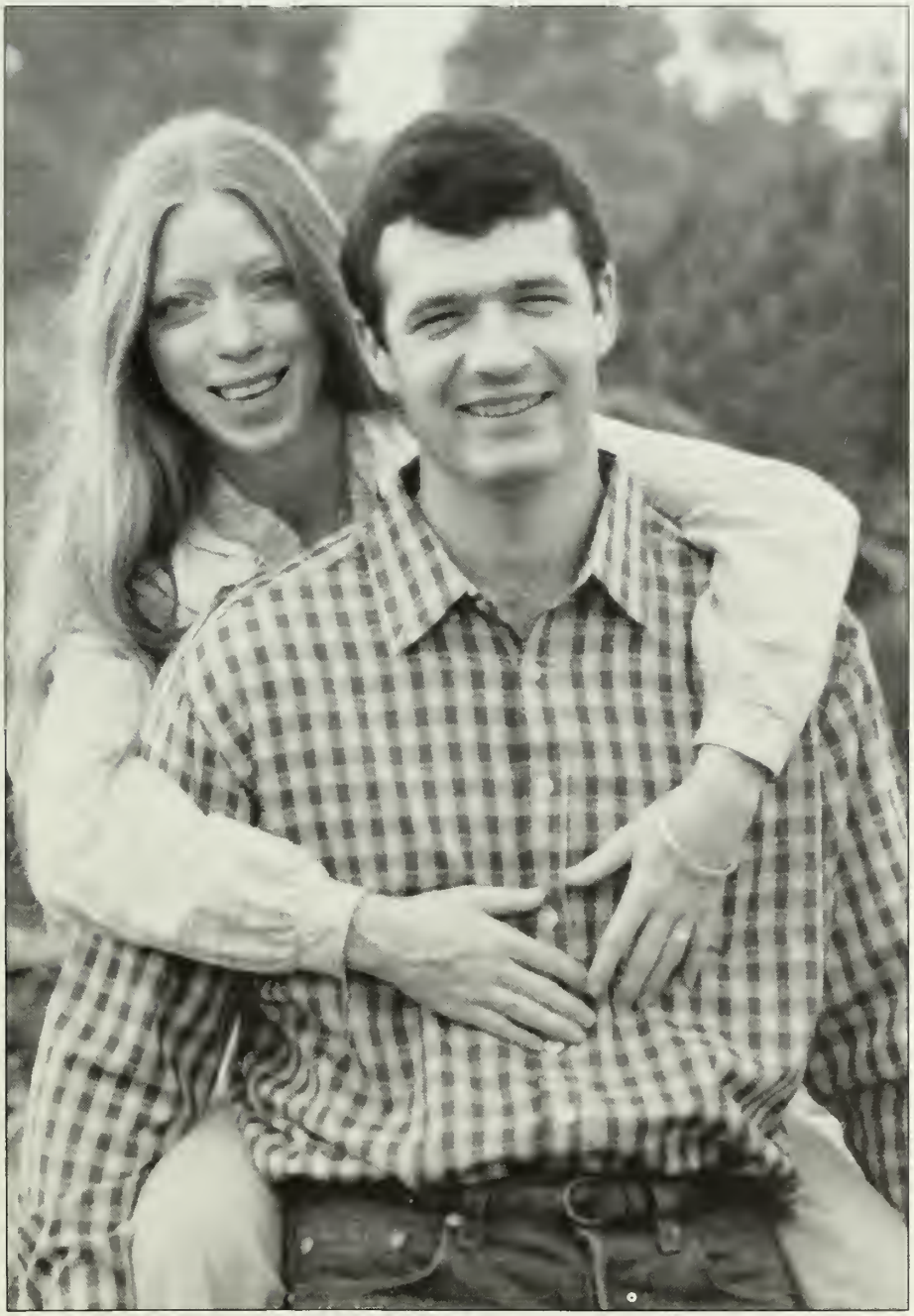
Mr. Richards regards organ donation this way — if some good can come out of death, then it should be done.

"But even though we may lose organs and tissues for donation, I always have to consider the feelings of the family as paramount," he said.

"Procurement coordinators enter a hospital-family situation at a very difficult time. If I see that I'm going to make matters worse, I back out with as much grace as possible. The family may still be denying the death or still angry concerning the loss of a loved one," Mr. Richards said. Also, the decision to donate organs should be agreeable to all family members, he said.

More and more families who lose relatives are approaching physicians with the idea of organ donation, Mr. Richards said. Such was the case when Scot and Loretta Lawlis of Appling, Ga., learned that their unborn child would not live long after birth.

While undergoing a sonogram to determine the position of her overdue baby, Mrs. Lawlis found out the baby she had nurtured for nine months was anencephalic. The baby's brain and skull



Scott and Loretta Lawlis

were markedly defective.

While driving home from the hospital that night, the idea of organ donation popped into Mr. Lawlis' head. "I'm not sure what made me think of organ donation. The thought just sort of hit me, that there may be some good to come out of our daughter's life," Mr. Lawlis said.

The next day, Mr. and Mrs. Lawlis talked with MCG physicians and organ procurement representatives about their desire to donate their baby's organs.

When Deseray Chantal Lawlis was born, her parents had already made preparations for her corneas to be donated. Other organs were not donated, since current technology would not allow brain death to be declared.

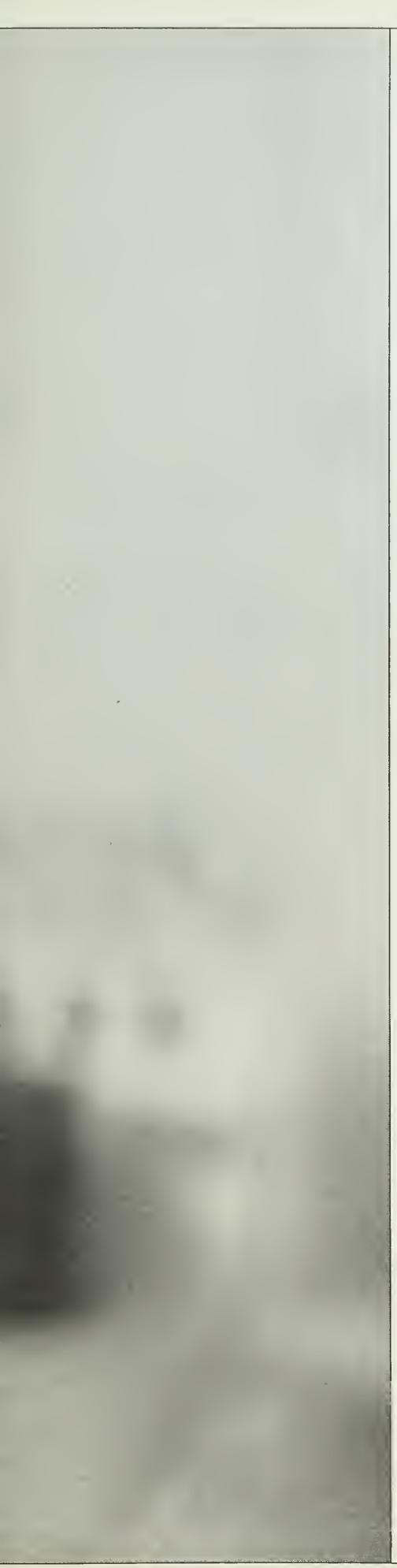
Mr. Lawlis held Deseray in his arms for the 58 minutes she was alive. "Giving up my baby girl was the hardest thing I've ever done in my life," he said.

Organ donation gave a purpose to their daughter's life, Mrs. Lawlis said. "It has helped so much to brighten our days to know that she has done some type of good for somebody," Mr. Lawlis said.

For the Lawlises, the decision to donate their daughter's corneas was made during a trying and emotional time in their lives. But once they realized her death was beyond their control, the answer was clear.

"I think people have to find the strength within themselves to take five minutes, put their own grief aside and step into somebody else's shoes. We took what we knew from our own problem and thought 'What if it was our child needing a transplant?" Mr. Lawlis said.

"We believe we did the right thing. There are not too many things you can do and know it is 100 percent right. But I believe donating organs is one of them. You can't go wrong," he said. ■



Bringing the world into focus

By Sally Simkins

Imagine seeing the world through a frosted glass: a misty blur replacing the outline of a tree and its leaves, the delight in your child's face invisible behind a haze, the flower's full beauty lost but for its fragrance.

This blurry world belongs to many who, because of eye disease or injury, are losing their sight.

"When people think of blindness, they think of everything being black, like the lights are out," said Dr. David Hull, professor of ophthalmology at the Medical College of Georgia. "It's not, most of the time. It's just very blurry, with very poorly focused images."

The idea of being blind can be frightening.

"Dr. Hull must have been able to see the fright in my eyes," said Dorothy Metzler, recalling events that led to surgery to replace the cornea in one of her eyes.

A year earlier, she had undergone corneal transplant surgery in the other eye. The first operation had been successful, but later she feared that something had gone wrong, that her eye was rejecting the transplanted tissue.

Mrs. Metzler became concerned when she noticed her vision blurring.

"I didn't say anything to Dr. Hull about the blurring, but he looked at my eye and told me to take the contact lens out and leave it out. I told him I thought the lens was just soiled, and he said, 'No, it's the cornea that's cloudy.'"

"Of course, then it got a little more clouded, a little more and a little more until it was all clouded over. I could see light and that was all. That worried me. I thought, 'If I lose this one, and this one is clouding, what will *it* do?' It was frightening to think that I would not be able to see anything."

Dr. Hull calmed her fears.

"He could see I was afraid," she said. "He knew what I was thinking. He told me not to get upset, that in three out of four times the rejection can be reversed."

Dr. Hull said transplanted corneas can be rejected just as kidneys, hearts and other organs, however, the rejection rate is much lower. He explained that the cornea is an "immunologically privileged site" in that it doesn't have blood vessels coming in which could bring in rejection antibodies.

Mrs. Metzler joined the ranks of successful statistics. The transplanted cornea was not rejected.

Had she not, she imagined a whole new life. "I would have to have been led around until I got used to being blind. But then, would you ever get used to being blind?"

Mrs. Metzler had her first corneal transplant in 1985. Surgery on her other eye followed last August. In September, she was well on her way to recovery and excited about the prospect of having full use of her eyes again.

"My husband and I were watching television just last night," she said. "I could see the color red in a commercial so I closed my (good) eye real fast to see what I could see with this one," she said, pointing to her healing eye. "I read 'Betty Crocker.' I was so happy. It's just been a couple of weeks and already I can see."

Mrs. Metzler's recent eye problems were not new. She began wearing glasses at 10 and had cataracts removed about 16 years ago. After that, her corneas began clouding.

"I hated glasses as a child and still do," she said. "But thank God, I have my eyesight. That's all I worry about. For that, I'll put up with glasses."

Dr. Hull explained that the cornea, where light first strikes as it enters the eye, covers the crystalline lens of the eye. He compared the cornea to the crystal on a watch, the protective cover through which numbers on the watch's face can be seen.

A cataract is a cloudy covering on the lens of the eye behind the cornea. It can be surgically removed and a plastic lens implanted in its place, but cataract surgery can occasionally cloud the cornea. Using plastic for corneal transplant has been investigated, but has not been successful.

The answer to corneal clouding is transplantation. The Medical College of Georgia Hospital's corneal transplant program is 13 years old.

Without the transplant of a new cornea — donor cornea tissue obtained from a cadaver — there is no next step. Without it, blindness results.

Clouding of the cornea is a risk of cataract surgery, Dr. Hull said. That risk, however, has been reduced in recent years.

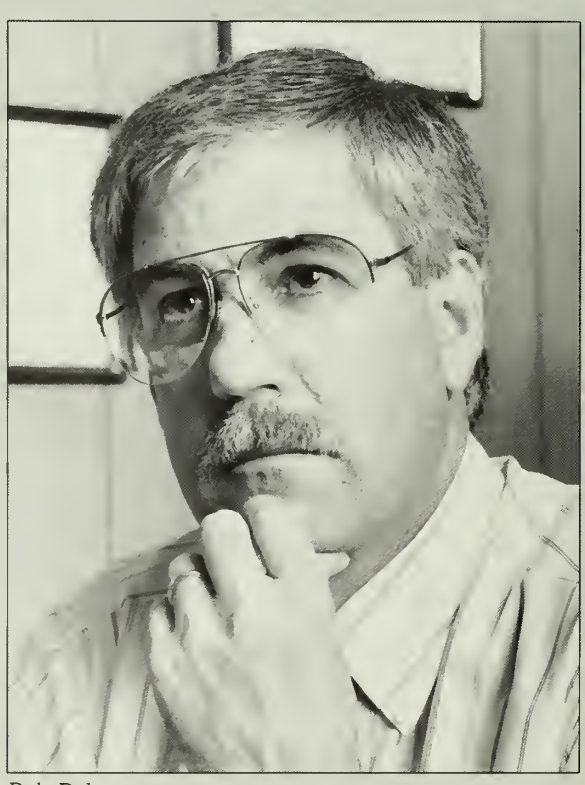
"The (lens) implants done up until about eight years ago were particularly at risk for causing a cloudy cornea to develop," he said. "But the implant used today is a different type and the cataract surgery is technologically better than 8, 10 or 12 years ago. Therefore, the risks are lower than back at that point in time. Complications from cataract surgery still, however, are the number one cause of clouding of the cornea."

Other causes are corneal swelling, which can accompany aging; eye injury, which can lead to scarring, and keratoconus, a cone-shaped protrusion of the cornea. Its cause is unknown but may be hereditary. ■

Corneal transplant brings clear vision to Bob Bolton

By Sally Simkins

A childhood injury led to 44-year-old Bob Bolton's corneal transplant. He was 7 years old when he was accidentally stabbed in the eye with a compass. The accident left a small white spot on his eye but did not interfere with his vision. "It was always 20/20," the North Augusta real estate agent said. About three years ago, the white spot began to grow.



Bob Bolton

"My eye felt like it had glass in it. I went to an ophthalmologist who said it was a cyst and, unless it was removed, could cause blindness within the next day or two.

"There was no decision for me to make. I had the cyst removed," Mr. Bolton said. He then developed a cataract which was removed in January 1985. Later that year he was told he needed a corneal transplant.

In December 1985, he came to the Medical College of Georgia.

"I told Dr. Hull I wanted to be with my new grandbaby on his first Christmas and we made it. I came in the hospital on Jan. 2," he said.

Mr. Bolton had been blind in one eye since the surgery to remove the cyst. "It saved my eye at first but the scar tissue and trauma left me legally blind," he said. "I could see light and movements and could distinguish colors, but that was it."

He's understandably proud and excited about the change that has occurred in the past year.

"Before, I couldn't see a watch," he said. "Now I can tell what time it is. It's a miracle!"

Corneal transplants can result in perfect vision if there are no other eye problems, according to Dr. Hull. For patients with corneal swelling, chances of a clear graft are 90 percent. A transplant made necessary by keratoconus has a 95 percent chance of resulting in a clear graft. Maximum vision is usually reached within a year after transplant.

The timing will be perfect for Bob Bolton — Christmas with his grandchild will look clearer than ever. ■

BANKING ON EYE TISSUES
for transplants and research

By Sally Simkins

As director of the Medical College of Georgia Eye Bank, Susie Parker spends plenty of time on the telephone.

She's always glad to hear from people who want information about eye donations or who are grateful for the corneal transplants that saved them from blindness.

But some calls are distressing — those from people who did not realize until too late that a relative was an eye donor.

"Many families have already talked about organ donation and know what they want to do at the time of death," Mrs. Parker said.

"Quite frequently, though, organ or tissue donation is the last thing people think about when a family member is dying," she said. "They don't think about it until after they get home from the hospital, or, even worse, after the funeral."

Physicians and nurses often talk with families about eye donation, but increased awareness among both medical personnel and the public would help meet the need for more donations, Mrs. Parker said.

Toward that end, a new Georgia law takes effect July 1 and requires hospitals to ask family members about organ and tissue donation at the time of death.

People who want to donate eyes or other organs may complete donor cards available through the Medical College. The state also has provisions for identifying a person as an organ donor on his driver's license.

The eyes must be obtained within six hours of a donor's death and must be transplanted within five to seven days, according to Dr. David Hull, professor of ophthalmology at the Medical College of Georgia.

"It used to be that the cornea would have to be used within 48 hours, but improved preservation mediums have extended that time," Dr. Hull said.

Talking about eye donation can be depressing for a family, Mrs. Parker said.

"You have to learn to deal with those," she said. "You take those bad times and you think of the recipient and the good that can come out of that traumatic experience or the death the family is going through. You have to learn to go full circle, so to speak, from death to an improved quality of life for someone else."

In 1986, the MCG Eye Bank received 180 corneas. Of those, 99 were transplanted at the Medical College Hospital or sent to other eye banks in the United States for transplant. This means that 99 people who would otherwise be blind have sight — the gift of sight. The remaining eye donor tissue was used for ophthalmic research.

"Donor eye tissue is invaluable, even though some may not be suitable for transplant," Mrs. Parker said. Donor tissue enables researchers to study lens aging, cataract formation, corneal preservation and clarity and sensitivity of parts of the eye to certain drugs. And, the availability of eye tissue provides the best hope for determining the causes of eye disease and for finding more effective treatment and prevention.

Eye donors can be any age.

"As long as the cornea is healthy the tissue is suitable for transplant," Mrs. Parker said. "We may have a 12-year-old child who doesn't have healthy endothelial cells (cells on the inside layer of the cornea) and a 62-year-old person whose cells are gorgeous."

Donor families often want to know where the eye tissue will be sent. This information is always confidential, however, as is the identity of the donor.

"Most families who donate do so not because of who is going to receive the tissue, but because they feel they will be able to help improve the quality of life for someone," Mrs. Parker said. "They still want to know a little about the recipient, though."

Although she does not divulge anyone's identity, Mrs. Parker will exchange correspondence between donor families and recipients. "The families want the recipient to know they are grateful they were able to help," she said. "And, the recipients want to say 'thank you.'"

The Eye Bank at the Medical College of Georgia, located in the eye clinic in the MCG Hospital's Talmadge Wing, was established in 1972 as the Georgia Lions Eye Bank, supported by the Georgia Lions Lighthouse Foundation, Inc. In 1984, financial support was provided by the Medical College, with partial support from the Lions, other civic organizations and individual contributions. ■

Susie Parker excises cornea from donated eye

FROZEN BONES

Human bones stored in deep freeze await transplant

By Toni Baker

On the first floor of the Medical College of Georgia Hospital is a deep-freeze. Inside are bones.

Hip bones. Thighbones. Kneecaps. Bones from the lower leg. Big bones from the upper arms. Rotator cuffs. Ribs. Jawbones.

The philosophy behind the collection of these bones is simple.

Bone donations are needed — for everything from reconstructing hips destroyed by disease or injury to rebuilding elbows similarly harmed to reconstructing the jaw.

The Medical College of Georgia Hospital is looking to meet the needs of patients with these problems at the same time it offers families of dying patients every option for donation.

"We've been coordinating the recovery of bone since the middle of 1985," said Mary Anne House, administrator of the organ procurement program at the Medical College of Georgia.

"We switched from just bringing in teams to recover it and therefore sending the bone away, to doing it ourselves because the orthopedists wanted to use it," said Ms. House.

Today the MCG-based bone bank serves all of eastern and southern Georgia.

This bone-banking business is a rather unique one in organ and tissue donation.

"It's certainly not as glamorous as vital organ donation," says Ms. House, who also is in charge of efforts at MCG to procure organs such as hearts, livers and kidneys.

"You're not likely to die from your total hip disease. (Bone transplants) are an improvement in the quality of life more probably than actually saving a life," Ms. House said. But although it may be less glamorous, bone donation is an important effort and a viable option for many people.

"Easily 50 percent of deaths in most acute care hospitals could be bone donors," Ms. House said. That's a lot more donors than anyone is getting.

To put that in perspective, only about 2 percent of patients who die in hospitals with more than 100 deaths a year likely are brain dead and meet strict criteria for vital organ donation.

"It's difficult to ask people about donation, period," said Ms. House.

"But bone and skin are harder to ask about than vital organs and eyes. It's new for one thing. People don't know about it. Plus, it raises some unsightly specters."

One more distinct difference exists between bone donation and the much more publicized donation of hearts, livers and kidneys.

"I think that the (potential bone donor) supply to meet all the demand is there. There are enough deaths out there," said Ms. House. That's distinctly different than vital organ donation in which "regardless of how many laws we have, we are still not going to meet all the demand," she said.

The key difference between potential availability of bones and availability of vital organs is the comparatively relaxed criteria for bone donation.

"Bone donors can be cardiac deaths. They don't have to be brain-dead people," said Ms. House. "It's not like with vital organs where you have to have a good blood pressure and a good urine output and a good set of lab values.

"You want someone who is not septic, who does not have any sort of transmittable disease. Somebody who has not had an active infection in a joint. Somebody who doesn't have cancer or who hasn't had cancer. Somebody who hasn't had any collagen, vascular or any degenerative neurological disease or who hasn't been bedridden for a long time and therefore would have lost the calcium in the legs." Despite those restrictions, there are still a lot more people who qualify as bone donors.

But as with vital organ donors, many people who could donate don't. "There's a lot of tissue being buried," said Ms. House.

Bone is not considered an organ, but it is a living thing that grows and heals and constantly changes, said Dr. Ron Hayter, orthopedic surgeon and chief of the joint implant service at the Medical College of Georgia.

Unlike vital organs, time is not such a crucial factor with retrieving and transplanting bones. The desire to retrieve bone within the first few hours after death is more to prevent infection and not delay the funeral than anything else, Ms. House said.

So although bone donors don't have the same strict criteria as organ donors, efforts are made to retrieve bone as soon as possible.

Bone is removed in the sterile environment of the operating room. All hospitals that cooperate with bone dona-

Mary Anne House with frozen bones awaiting transplant ►

tion efforts donate the needed operating room. "We bring everything we need with us and we mop the floor when we are through," Ms. House said of her team that travels throughout much of Georgia to retrieve bones and vital organs.

Once bone is retrieved it must be stored.

"It's almost impossible to match size perfectly so you can take it out of one person and put it into another one the same day or next hour," Dr. Hayter said.

"So we have to have a variety of sizes and shapes available. The best way to store bone is to freeze it," the orthopedic surgeon said. That ensures a variety of bones waiting in the deep-freeze at minus 70 degrees centigrade.

Freezing does a good job of preserving the bone. But cartilage gets brittle when it's frozen and thawed. "That has been the drawback of transplanting joints because the cartilage doesn't stand up well," Dr. Hayter said. One of the next efforts at the Medical College of Georgia likely will be securing the tools and skills needed to successfully preserve cartilage.

But finding a suitable home for the donated bone is not as difficult as with a major organ.

"It's interesting that bone does not seem to have antigens like kidneys, hearts and livers so with bones you don't worry about an immune response," said Dr. Hayter.

A transplanted bone may elicit an immune response, but it doesn't seem to interfere with the function of the bone, he said. Freezing also seems to reduce immune response.

Technically a bone is dead before being transplanted, says Dr. Hayter. "What happens when you put it into someone, is it re-establishes a blood supply.

"The way a bone heals is by a process called creeping substitution," he said. There are two kinds of cells in the bone — those that remove bone and those that produce bone.

"Whenever you have a broken bone, cells that remove bone come in first to remove the damaged part. Then the cells that make bone come in and make new bone that heals the fracture.

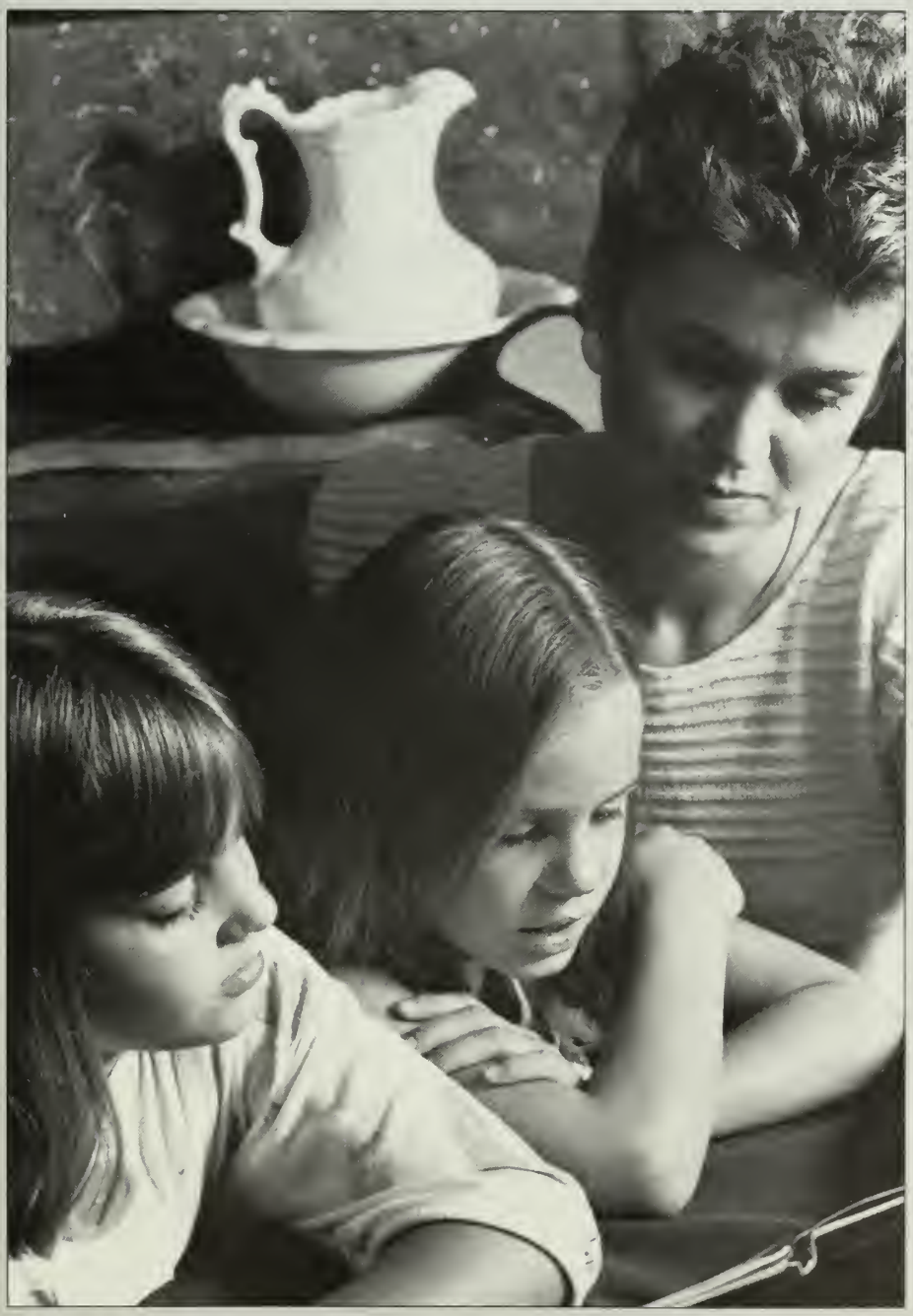
"When you have a transplanted bone, cells that remove bone come in and partially remove the dead bone, but not all of it. Then the new cells come in and make bone to heal the transplanted bone," Dr. Hayter said. "Eventually, there remains a composite of transplanted bone and new bone." ■

Dr. Ronald Hayter and Mary Anne House clean bones

Walking tall

Bone graft made Kaye Griffin's life more comfortable

By Toni Baker



Kaye Griffin at home with daughter Krystal (center) and friend Rachel Rice (left)

Kaye Griffin stands solidly on her own two feet. Her stance is thanks to creative surgery and the thoughtfulness of a person she'll never know.

The 31-year-old mother of two is diabetic.

Sept. 11, 1979, Mrs. Griffin went into insulin shock while driving the family's new pickup truck.

"I drove straight off the road, over a ditch, into a plowed field, turned over six times forward, three times sideways and was then thrown out of the truck." Damage to her left side was extensive. Her pelvis was crushed. Her thighbone was crushed. Her knee was damaged.

She was in traction in Orangeburg, S.C., for eight weeks. Then doctors cemented in a new, shiny smooth artificial hip. Everything was fine. Years passed.

"She had what we call a fractured dislocation of the hip," said Dr. Ron Hayter, assistant professor of orthopedic surgery and chief of the joint implant service at the Medical College of Georgia. Dr. Hayter became Mrs. Griffin's doctor years after the original surgery, when time and wear began to take a toll.

Back in 1979, cement was about the best option for securing the artificial hip Mrs. Griffin needed.

But cement is a weak link.

The young, physically-active woman began to wear down the cement that held her new hip in place. She was in pain. The cement and bone were wearing.

"Once you get pain from a loose hip, it doesn't get better," said Dr. Hayter. "It gradually got to where she couldn't get around without pain. When we looked at her X-ray you could see that (the hip) had worked loose."

Studies show that when standing,

the amount of force on a hip joint is three times the body weight, Dr. Hayter said. Running can multiply the force 10 times.

Time, slippage and wear took its toll on Mrs. Griffin's artificial hip. She was left only with a hollow shell of a femur (thighbone) and pain.

This time there was an option for repair.

Another cemented hip likely would cause the same problems as its predecessor.

So Dr. Hayter opted to use a bone graft.

Dr. Hayter retrieved a bone graft from MCG's bone bank, a deep-freeze where harvested bones are stored at about minus 70 degrees centigrade.

The surgeon ground the graft into a slurry, then packed it inside the femur hollowed out by wear. A stainless steel hip with a rough outer surface replaced the smooth hip that was cemented in years before. The bone grows to this rough hip, eliminating the need for cement.

"You try to keep as much of their bone as you can," says Dr. Hayter.

Gradually the slurry grows into the bone, and at six to nine months is nearly as tough as the original bone.

Mrs. Griffin moved from the bed to crutches to a cane to standing on her own two feet again.

It's doubtful Mrs. Griffin can ever run, but she can do almost anything else, including keeping up with her two young children, Wade and Krystal.

Dr. Hayter hopes the transplant was a permanent option for Mrs. Griffin and she won't need any further surgery.

The idea of bone transplants origi-

Dr. Ronald Hayter in surgery

nally developed for people who had bone cancer, Dr. Hayter said. Cancer used to mean removing the entire bone.

"It's a terrible thing to have to amputate a young person's leg," Dr. Hayter said. The femur commonly is involved in bone cancer. "You've got a good leg and a foot below that. But to get rid of the cancer, you have to take the whole leg off. The idea was, if we could just remove the bone and replace it with another bone, maybe we could save the leg."

Chemotherapy and radiation therapy help fight this devastating cancer, but unless the bone cancer is caught very soon, the victim stands a good chance of losing his limb or his life.

Better treatment of this aggressive cancer has dropped mortality rates from about 50 percent at two years from diagnosis, to about 50 percent at five years.

When bone transplants were first used in the 1960s, they were performed in very select locations, primarily because of the tremendous involvement of money, time and equipment, says Dr. Hayter.

Bone transplants have been performed at the Medical College of Georgia since July 1985.

Most people who need bone transplants have traumatic injuries, artificial joints that failed or bone cancers where the alternative is removing a limb.

Mrs. Griffin really fits into two of those categories since she had a traumatic injury and, later, an artificial joint that failed.

Arthritis that eats away at the cartilage is the most common reason people need artificial joints. The cartilage is a sort of pad and shock absorber between the bones. It's possible to transplant actual cartilage, although the long-term survival of the cartilage is doubtful. Sometimes, with young people, it's better to take the chance on transplanting cartilage, Dr. Hayter says. For older people, a hard plastic is used to reduce friction and provide a cushion.

Other times it's necessary to transplant an entire hip, not just the joint. But again, it's desirable to leave as much of the patient's own bone as possible, then secure the transplanted hip with screws and a plate.

"The potential probably exists for a bone transplant of some variety being used in about 100,000 people each year in the United States," Dr. Hayter said.

Mrs. Griffin walks with her children, Krystal and Wade

The orthopedic surgeon also has transplanted ligaments — bands that hold bones together — and he has transplanted one knee joint. Dr. Hayter would like to do more of these.

He is considering an elbow transplant on a woman whose elbow was smashed in an automobile accident. The elbow isn't working as well as it could.

Probably the best thing about bone transplants, says Dr. Hayter, is that someone else's bone is the next best thing to your own, and a transplant has a much longer life potential than the best of artificial substitutes.

Mrs. Griffin feels great about her surgery and about the bone donor who made it possible. She has become an organ donor since her experience with being on the receiving end.

"To me, it took a special person to donate their body to help people like me. I'd like to do that in turn someday. If everybody (donated), then these people who are dying because they don't have a liver or a kidney or a heart or whatever . . . there's got to be somebody out there who has one close enough like theirs so it will work. It's just a shame for somebody to lie in a hospital and die because nobody gave theirs. If you are going to die, you are not going to need (your body) anyway. Why let it lie in a coffin when it can be helping somebody?" ■

Rejection doesn't always mean failure

By Catherine Boardman

The body's immune system that fights so hard against disease and infection can be a threat to those undergoing an organ transplant. The possibility of organ rejection looms over all transplants.

Janet Barnett tells all her patients that they are going to experience some rejection.

"Ninety percent of all successful kidney transplant patients go through a rejection episode. But that doesn't mean the patient is going to lose the kidney," said Mrs. Barnett, lead transplant coordinator for the Medical College of Georgia's kidney transplant program.

Choosing a donor whose tissues most closely match those of the patient is the first step in avoiding rejection.

In the histocompatibility lab at MCG, specialists type tissue samples to determine the best match between donor and recipient.

The surface of each living cell contains substances called HLA antigens.

"These antigens are analogous to blood types except there are four major blood types and thousands of different tissue or HLA types," said Dr. Sue Leffell, associate professor of surgery and director of the histocompatibility laboratory at the Medical College of Georgia.

Identical matches are extremely rare among non-related people because so many tissue types exist, Dr. Leffell said.

Tissues from a cadaver donor are typed and entered in a computer already loaded with recipient information. The computer tries to match not only local recipients but those needing organs in the Southeast and across the United States.

The chance of finding a good match between blood-related people is high since HLA antigens are inherited. The chance that any two siblings will inherit the same tissue antigens is approximately one in four, Dr. Leffell said.

Even with a good HLA match between donor and recipient, the body's immune system may recognize other non-HLA antigens as foreign. Consequently, rejection episodes are frequent.

To ward off rejection, immunosuppressive drugs are administered to kidney transplant patients at the Medical College of Georgia. One immunosuppressive drug, cyclosporin A, is a highly effective and relatively new drug on the transplant scene.

"It has vastly improved the prospects for transplant recipients," said Dr. P. Allen Bowen, assistant professor of medicine and transplant nephrologist at the Medical College of Georgia.

Transplant recipients must remain on immunosuppressive medications for life. These drugs are costly and come with some serious side effects. The biggest drawback is a lowered resistance to infection.

"We're walking a tightrope between rejection on one hand and infection on the other," Dr. Bowen said.

Other side effects include acne, high blood pressure, weight gain, stomach ulcers and insomnia.

Often immunosuppressive drugs are not enough, and hyperacute rejection occurs immediately. "It is a consequence of the recipient having antibody already circulating in their blood directed against donor antigens," Dr. Bowen said.

Hyperacute rejection is avoided by performing a pre-transplant cross match test, the final compatibility test before a transplant. Cells from the donor are mixed with serum from the recipient to test for antibodies. If the test is positive, the transplant is not performed because the organ would be rejected, Dr. Bowen said.

Chronic rejection, a slow progressive loss of function of the transplanted organ, can occur any time. "Certain medicines will slow the deterioration but treating chronic rejection is extremely difficult," Dr. Bowen said.

Acute cellular rejection also may occur any time after transplantation but is treatable. "Acute rejection presents the biggest problem in transplantation," Dr. Bowen said. The challenge involves administering medications to suppress the body's immune system without immobilizing the entire network.

Anti-lymphocyte medications are used to treat acute cellular rejection in the Medical College's kidney transplant patients. These medicines work against lymphocytes, cells that produce the antibody causing rejection.

A new anti-lymphocyte serum, OKT 3, is 95 percent effective, Dr. Bowen said. However, OKT 3 can usually be used only once since patients develop antibodies to the drug, he said.

Kidney transplant patients are monitored closely during their hospitalization, but when they leave the hospital the responsibilty falls on them.

"We spend a great deal of time educating our patients on what to watch for as far as rejection. They know to call us at the first hint of trouble," Mrs. Barnett said.

The signs of rejection include increases in temperature, blood pressure or weight, a decrease in urine output and swelling or tenderness of the new kidney.

"Our patients are very good. They want these kidneys to last so much because finally they are off dialysis, feel good and have a new sense of freedom," Mrs. Barnett said.

"To think that you are rejecting a new kidney is really scary," she said.

Marsha Arnold of Grovetown, Ga., rejected a kidney during her first transplant four years ago and went back on dialysis. That meant going to the dialysis unit three times a week for three hours each visit. Another kidney was transplanted into Mrs. Arnold at the Medical College of Georgia on Aug. 4.

Her body rejected the kidney six days after surgery. Her symptoms included fever, decreased urine output and elevated creatinine, a component of urine. "It was not real painful actually," Mrs. Arnold said.

Mrs. Arnold was given OKT 3 which reversed the rejection. "I feel good and my energy is starting to pick up. I can get up and go anywhere I want to," she said.

The side effects of anti-rejection medicines have been minimal for Mrs. Arnold. The benefits are numerous. At Christmas, she plans to spend a week with her father in Tennessee. "I can go and not have to worry about setting up dialysis treatment. I'm really going to enjoy that," she said. ■

◄ *Steve Arthur and Sue Leffell read donor cell reactions in histocompatibility lab*

From small beginnings

Research aims to perfect organ preservation

By Gwen Corinth

The kidney, no bigger than an egg, rested on a gauze pad above a network of tubes carrying a pungent smelling, clear liquid.

Moments before, laboratory research assistants Anita Wylds and Lois Phillips removed the kidney from a rabbit, threaded tubes into the organ's artery and vein and began flushing it with a solution containing dimethylsulfoxide, or DMSO, which smells remarkably like garlic.

Odoriferous as it may be, their work may prove invaluable for the future of organ transplantation. Directed by Dr. Armand Karow of MCG's Department of Pharmacology and Toxicology, the team is researching the possibility of preserving human organs for indefinite storage. The result could be an organ bank allowing physicians to choose the perfect immunological match for their patients.

A human kidney can be stored unfrozen for up to three days, but Dr. Karow believes organs can be frozen and stored longer.

"Red (blood) cells can survive (frozen) for decades and so can sperm, so why couldn't kidneys?" he said.

But solid organs pose different problems than do cells and tissues.

Part of the puzzle is finding the right cryoprotective drug in the right concentration to function as an antifreeze of sorts — keeping the organ's cells alive while frozen. Dr. Karow believes he has found it in DMSO, which is quickly absorbed and released to maintain osmotic equilibrium, the fluid balance necessary to avoid cell damage from swelling. This, combined with DMSO's low toxicity, make it a good cryoprotectant, Dr. Karow said.

The cryoprotectant also must be administered properly — flushing it through the kidney too fast or too slow could cause damage. Timing is also important later when the organ is frozen and thawed. The temperature must be lowered and later raised at the correct rate to avoid damaging cells.

Dr. Karow and his associates have successfully frozen and thawed slices of a rabbit kidney. After incubating in DMSO solution, the slices are frozen to minus 40 degrees C, thawed and subjected to lab tests to see if the cells are alive.

They have also tested the viability of a DMSO-treated kidney by flushing it with DMSO solution, rinsing it clean and reconnecting it to a living rabbit.

Last year, Dr. Karow successfully implanted a DMSO-treated kidney into dogs. After a three-week recovery, the kidney's function was essentially normal, he said.

The next step is to freeze a whole kidney, thaw it and reconnect it in the rabbit and eventually perform the same procedure in a dog, which more closely resembles a human model. Testing the procedure on a whole organ will show how well kidney cells withstand the process.

Although the researchers have made significant progress, Dr. Karow says it will be a long time yet before a human organ is tested.

"I really can't speculate on that. I just don't know," he said.

Advances come slowly, mainly because each step must be tested on a sample size large enough for statistical analysis. For example, testing the organ's reaction to different freezing temperatures may require 10 to 20 repetitions of the same test.

But despite this, MCG has been leading the way, and this leadership has resulted in international recognition, Dr. Karow said.

Dr. Karow and his researchers have successfully used radio energy to achieve controlled warming when kidney slices are thawed, administered cryoprotectant without killing the organ and chilled it at a rate so freezing won't fracture the organ.

They may even find that freezing can be avoided. Instead, it may be possible to administer a high enough concentration of cryoprotectant to preserve the living organ.

Dr. Karow's research has included a six-year collaboration with the Georgia Institute of Technology in working on thawing equipment. The research is supported by funds from MCG, the Georgia affiliate of the American Heart Association and the National Institutes of Health. The research costs about $100,000 a year in salaries, animals, supplies and equipment.

A by-product of the project has been the training of seven graduate students and three post-doctoral fellows in Dr. Karow's lab. One is Dr. Gregory Fahy, a 1977 pharmacology graduate of MCG's School of Graduate Studies. Dr. Fahy is a senior scientist studying organ preservation with the American Red Cross.

"I think it's a pretty important responsibility of an institution of higher education to enable people to go off and work independently and be a success in their own right . . . and for the institution to be able to grow as a consequence," Dr. Karow said. ■

Research assistant Anita Wylds perfuses rabbit kidney with DMSO solution ►

"Jiffy-Jack"

MCG IN THE NEWS

He's got the "blues"

By Toni Baker

When Dr. J. Graham Smith Jr. serves up "the blues," he includes a little something for everybody.

A bunch of articles on therapy, maybe a slice of economics and social issues, a bit of history, book reviews, abstracts from other major medical journals and articles sufficient to meet the continuing medical education needs of the average dermatologist.

"I think we are to the point that if someone has basic training as a dermatologist, if they read this journal, there is nothing going on in dermatology they ought to know that they don't know," said Dr. Smith, chairman of the Medical College of Georgia Department of Dermatology and the first and only editor the Journal of the American Academy of Dermatology has ever known.

It was spring 1978 when Dr. Smith hesitantly assumed his pioneering role with "the blues" — an affectionate term for the brilliantly blue publication.

"I didn't think there was a need and I didn't want to be editor," he recalled, referring to the 1970s when there were already a dozen or so specialty journals.

Dermatologists had the Archives of Dermatology, a journal which had survived more than a century.

But trouble was brewing.

The Archives was one of the few publications of the American Medical Association that was making money. Most journals lost money, a condition prompting such unpopular changes as reducing page numbers and making advertisements an integral part of the magazine, much as ads are in less prestigious "throw-away" journals.

Dermatologists reasoned it wasn't fair that the Archives was making money but having to live by the same rules as its financially-troubled counterparts.

Dr. Smith eventually was approached about editorship of a new, more innovative journal for dermatology. He told his wife Jean he'd never take the job.

Some friendly arm-twisting by his friend and colleague Dr. John S. Strauss — Dr. Strauss chaired the committee charged with finding a publisher and editor — made Dr. Smith reconsider.

He became the first editor of the official journal of the American Academy of Dermatology.

Promises made about the journal were promises kept.

The new journal's page limitations adjusted with the ebb and flow of dermatology. Pages of advertisements were present, but were not numbered as though they were a part of the editorial text. The new editor could plow new ground.

Dr. Smith developed some basic tenets for operation, including his something for everyone philosophy about content. He says he edits the journal for Dr. Woody Bruce.

Dr. Bruce practices dermatology in a relatively small city and has no access to a big medical library and no teaching appointment. Dr. Smith says there are a lot of Woody Bruces out there. So he aims to meet their needs.

"One goal was that the practitioner who reads the journal from cover to cover could go to bed every night knowing that there was nothing about dermatology that he ought to know that he wouldn't read sooner or later. We've just about achieved that. I really think that that editorial philosophy, probably more than anything else, is the reason that we've been successful," Dr. Smith said.

When he runs into a deadlock — one reviewer says an article is great and the other claims it's anything but — Dr. Smith will pull in a third reviewer. Sometimes that is Dr. Donald C. Abele, associate editor of the journal and professor of dermatology within Dr. Smith's department. Sometimes it isn't. But regardless, Dr. Smith ultimately has say-so over an article's fate.

"I think the influence that an editor of a major journal has — and most people don't think about it — is really awesome. In the malpractice climate where we live, I am deciding what the standards of practice of dermatology are by what I publish and what I don't publish."

Dr. Smith said it was only later in his tenure as editor that he realized the full implications of the job he took reluctantly.

The dermatology chairman definitely has lost sleep over the blues, worrying about Murphy's law being played out in the journal that has come to mean a great deal to him.

"I think it's a hell of a good journal," he said. The main complaint he hears is that it has too many pages. He tells the complainers that they don't have to read them if they don't want. As editor, his main complaint is that dermatologists have a tremendous opportunity to publish in the journal, and not all take advantage of it.

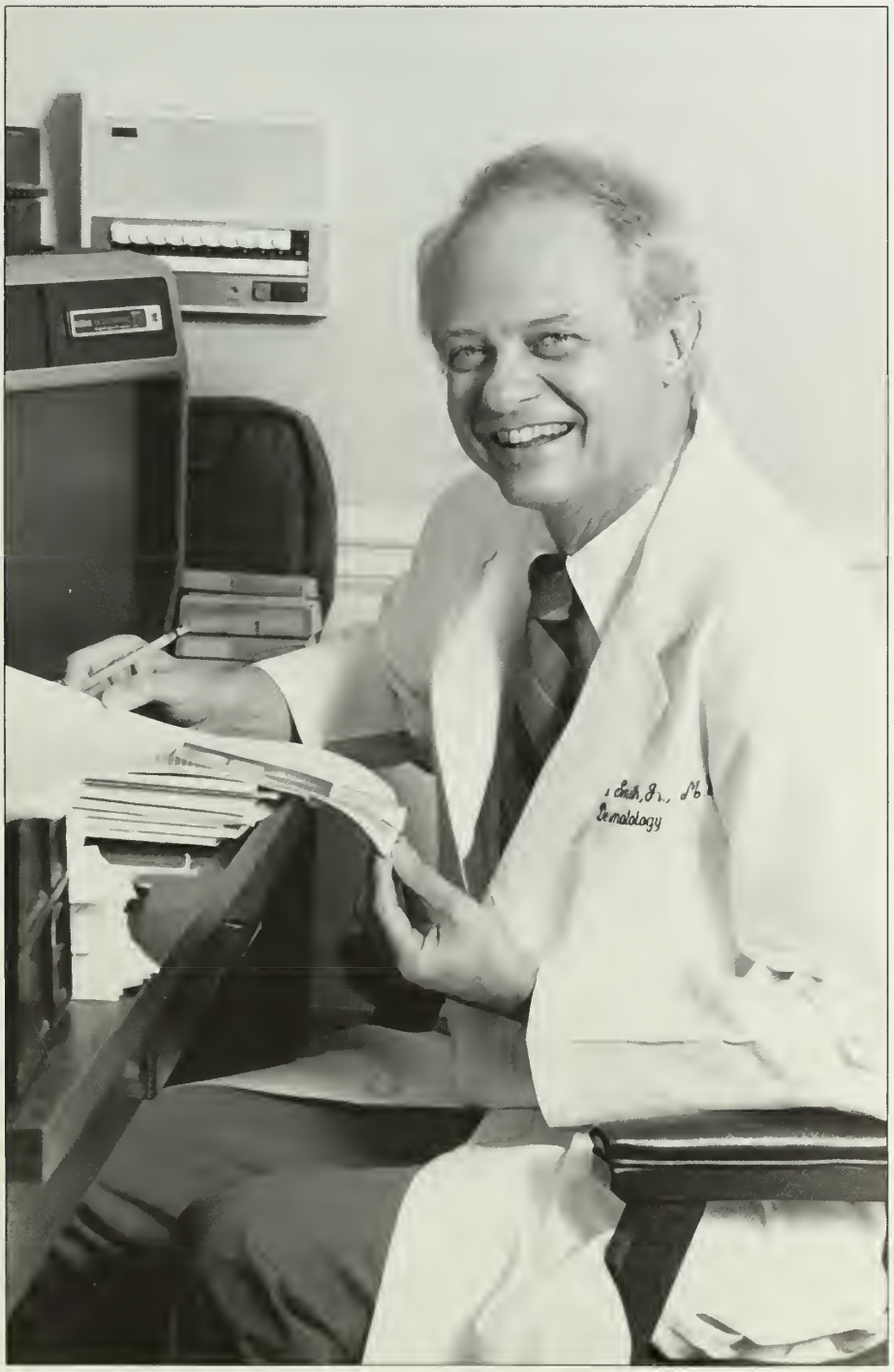
He also tries to keep journal articles as straightforward as possible. "It takes little skill to take something that is reasonably simple and make it so complex that no one can understand it. The skill comes in taking something complex and making it simple."

The dermatology chairman says he probably puts in 20 hours a week on the monthly journal, but that's not based on a 40-hour workweek.

Nevertheless, he points out that the Medical College of Georgia deserves credit for letting him devote the hours.

Dr. Smith also wants to credit Anne S. Murray, his former editorial assistant, as well as Linda L. Smith, now his editorial assistant, and her assistant, Belva D. Hamilton. Without their mammoth effort, the blues might only be a good notion.

As for his role as editor, Dr. Smith says picking article reviewers is his most



Dr. J. Graham Smith Jr.

important task.

The journal has gone from a few articles submitted for the first edition, to hundreds now regularly being submitted. "The reviewers are the people who decide whether something should be published or not," says Dr. Smith.

To pick the reviewer, he examines the topic. "There are certain areas where you know who the experts and authorities are. You know from experience that these people will write good (not necessarily favorable) reviews for you. For example, in acne there are about four or five top people in the United States." It's not a chore for these people to review an article on acne.

But life isn't always so simple. If there is no authority who jumps to mind, Dr. Smith peruses the bibliography for someone who has written on the same topic. Sometimes he turns to a computer service that accesses resources of the National Library of Medicine to come up with the name of an expert.

If he still comes up empty-handed, he's got some "clinical scholar" sources who make it their business to know who is in the know about a variety of topics.

Should the article cross over into another field, say plastic surgery, Dr. Smith also gets a plastic surgeon to review it. "I feel the article should hold up, not only in its field, but in the other field, too."

Dr. Smith has been told that the blues represent his greatest contribution to dermatology. He wouldn't argue the point.

But when his second five-year term as editor ends in 1988 there's a good chance Dr. Smith's name will be coming off the table of contents page.

"I'd be very disappointed if something new and exciting didn't come along. I wouldn't object if some other organization or journal came looking for an editor." ■

MCG Foundation names three new members

Dr. William C. Collins, Peter S. Knox III and Dr. Virgle W. McEver Jr. were named to the Medical College of Georgia Foundation board of directors at the annual meeting May 3.

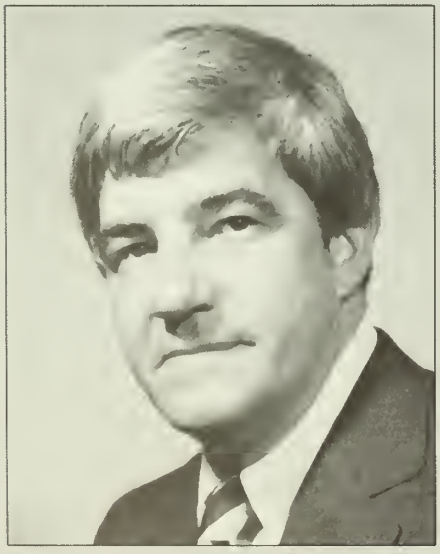
Dr. Collins, an Atlanta orthopedic surgeon, graduated from the University of Georgia and received his MD degree from the Medical College of Georgia in 1962. He served an internship at Floyd County Hospital in Rome, Ga., a residency at Georgia Baptist Hospital in Atlanta and a fellowship in hand surgery at Duke University.

Dr. Collins is chairman of the Medical Association of Georgia board of directors and is a member of the MAG Mutual Insurance Company board of directors. He is state chairman and a trustee on the board of the Orthopedic Research and Education Foundation, vice president of the Georgia Orthopedic Society and president-elect of the Southern Orthopedic Society. He is also a member of the board of directors of the Presidents Club of the University of Georgia, the Medical College of Georgia School of Medicine Alumni Association, the Georgia Health Network and Atlanta Medical Heritage, Inc.

Mr. Knox, an Augusta native, graduated from Georgia Institute of Technology in 1957 and received a master's degree in business from Harvard University in 1959. He is chairman of the board and a director of Merry Land and Investment Company in Augusta and is president and a director of Great Southern Federal Savings Bank in Savannah.

Dr. McEver, a general surgeon, is chief of staff at Houston County Hospital in Warner Robins, Ga. He received a bachelor's degree from North Georgia College, a master's degree from the University of Alabama and an MD degree from the Medical College of Georgia in 1953. He served an internship with Brooke Army Hospital in Texas and a residency with St. Joseph's Infirmary in Atlanta.

Dr. McEver has been a Houston County commissioner for 12 years and is a member of the boards of directors of the Medical Association of Georgia, the North Georgia College Foundation and First Federal Savings and Loan of Warner Robins. ■



Dr. William C. Collins

Peter S. Knox III

Dr. Virgle W. McEver Jr.

Giving

Supporters of the Medical College of Georgia are being encouraged to name MCG Foundation, Inc. as the beneficiary of gifts in wills and other trust arrangements.

The Board of Regents of the University System of Georgia recently requested that individual colleges and universities within the system encourage their supporters to name tax-exempt foundations at particular schools as beneficiaries of such gifts. This procedure is expected to ease the administrative aspects of managing the gifts.

A gift made to any unit within the system is technically the property of the Board of Regents. The regents take official action to designate gifts for their intended purposes.

Officials at MCG created MCG Foundation, Inc. in 1954 to administer its gifts. If you have provided for the Medical College of Georgia in your will, please check with your attorney to insure the Medical College of Georgia Foundation, Inc. is properly named.

If you are now preparing your will and are considering naming MCG as a beneficiary, feel free to contact our offices at (404) 828-2515 for assistance. We can provide information on designating uses for the funds, honoring loved ones, receiving tax benefits or other aspects you and your attorney may discuss.

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